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IMPROVE COMMUNITY HEALTH THROUGH HERBAL MEDICINE: USES AND APPLICATION OF MEDICINAL PLANTS - A CASE STUDY IN SOUTH INDIA

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ABSTRACT

Educational training on herbal medicine uses and application of medicinal plants for community based farmers is a new intervention being carried out at BIRD-K training centre. An educational training programme to revitalize the herbal plants of traditions was initiated in 2003 by BIRD-K Tiptur in collaboration with government human health care department, ethnobotanical healers and many field based non-governmental organizations in southern India. In the training documented about forty-seven plant species used against different health disorder of rural community farmers. Information was collected from local people, physicians and traditional healer's literature about plant name, family, local name, Sanskrit name, parts used and uses to cure various health related problems, mode of administration are listed in the form of table 3. The interviewed traditional healer groups use plant parts either single or in combined form to treat health disorders like cholera, asthma, bone diseases abdominal pain, diarrhea, dysentery, worm, and stomach pain etc. So the study, training and documentation and conservation of the knowledge are essential. Proper identification and documentation of these plants were successfully done, which will help to select these plants for further studies.

KEYWORDS: Asthma, Documentation, Educational training, Herbal plants, Participatory Rural Appraisal, Rapid Rural Appraisal.

INTRODUCTION

Ancient India has the ancient indigenous knowledge of ethnomedicinal and ethnoherbal medicines accumulated through many centuries. This indigenous knowledge of curing human

illness is based on different Indian systems of ethnomedicine, practiced by various communities such as Ayurveda, Unani and Siddha.[3] The World Health Organization (WHO) has estimated that 80% of the world population is directly or indirectly dependent on ethnomedicine for their primary health needs.[1] The use of ethnomedicinal plants is still a traditional, continued by traditional communities who are living in remote areas. From ancient times in India, the importance of ethnoherbal and folk medicines in the treatments of various health ailments are well known.[6]

It is estimated that in India, traditional healers use around 2500 plant species in the preparation of traditional medicine. Traditionally, this treasure of knowledge has been passed on orally from generation to generation without any written document and is still retained by various indigenous groups around the world.[4]

A preliminary survey data of villages in and around Shimoga town of Karnataka revealed that local communities residing in three villages are still practicing ethnobotanical medicine extensively in their primary health care.[5] India is a repository of herbal medicinal plants. At present about 65% of Indians are dependent on the indigenous ethnomedicinal system of Skin diseases like eczema, leucoerma, ringworm, scabies and many other conditions are treated completely with ethnobotanical medicines.[8]

Northern Hyderabad Karnataka region, the plant diversity is very rich and a good number of medicinal plants are used in the treatment of various diseases including skin diseases Moreover, the medicinal plant wealth is our national heritage and it seems to be the first and foremost line of defense for the treatment of various diseases mostly in tribal and rural communities.[7] The main objective of the present study is to collect scattered ethnobotanical information and identified documentation of traditional knowledge on medicinal plants used in the treatment of human ailments in South India. Table 3 contains lists of information on useful medical plants and human diseases.

MATERIALS AND METHODS

Study area

The Educational training on ethnomedicine improve Community health through herbal medicine uses and application of medicinal plants is a new intervention being carried out at BIRD-K training centre. It is located in Karnataka and lies between north latitude 13^0 $11^{'}$ $55^{''}$ N, and 76^0 23^0 $41^{''}$ east longitudes. The ethnomedicinal healers of the project sites covered

eight villages within three semi arid districts of Anantapur and Mahabubnagar in Andhra Pradesh and Tumkur in Karnataka in south India (Fig 1). From each cluster 1-2 persons who are already involved in the ethnomedicine treatment of diseases were identified and were trained at BIRD-K training center in order to hone their skills and capacity. All the trained persons render good service as ethnomedicinal para technicians in their respective clusters. They help the farmers in identifying the rural human health problems, providing information on ethnomedicinal practices and treating the rural human ill or diseases.[2]

Ethnomedicinal healer's survey

Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA) techniques are widely used in gathering information with stakeholder, village farmers in the selected clusters. The approach was to take advantage of traditional ethnomedicinal healer's knowledge and the capacity of farmers to experiment and solve their own problems. The approach begins with in depth participatory diagnosis by a broad cross section of the community, including men and women from the different wealth and age groups (Table 1).

Documentation

The first priority to documentation, the consent of the traditional healers is sought to document his knowledge on traditional health practices. This was done in written form called the prior Informed consent. Documentation is done in groups to facilitate the documentation process. Each group ideally consists of 4-5 folk healers, a human health care doctor, doctor of indigenous system of medicine, a botanist and a documenter. Assessment training is conducted in a local community healers, community members, Folk healers and ethnomedicine and ayurveda doctors along with other subject experts. Different experts who participate in the training comment on a particular health condition and practice based on the data available from their own respective knowledge systems. After the collection of data related to traditional ecological knowledge related to plants, their botanical names, family, local names and parts used, new information collected was compiled and documented. The photographs of the plants have been maintained in the softcopy. The plants and plant parts were air dried under shade and preserved as herbariums and dried specimens. Herbariums of all the plants are deposited in the BIRD-K training center.

RESULTS AND DISCUSSION

It can be seen from Table1 that the number of households varied from 152 in Pampanur in Anantapur cluster to 528 in Dharmapur in Mahabubnagar cluster. The number of SC families

was also found to vary across villages. A majority of land holdings were found to be small (<1 ha) in almost all the villages. The proportion of poor families varied between 21% in Y. Kothapalli and 67% in Pampanur in the Anantapur cluster. Thus, a conspicuous proportion of households in the villages were poor. A majority of villages are not well placed in terms of infrastructure development. For instance, out of seven villages selected, only two have veterinary clinics, only one has a hospital and only one village in Tumkur has a milk collection centre (Table2). In recent times, local NGO like BIRD-K and others, working in Ananthapur, Mahabubnagar district of Andhra Pradesh, and Tumkur in Karnataka have undertaking to popularization of herbal medicines for community villages. In the training documented about forty seven plant species used against different health disorder of men and women. Nearly 47 plant resources for nearly 26 health conditions were studied during this study training. Seventy percent of the remedies had positive evidence from various systems of medicine and practical experience. The plants used for the treatment with their botanical names, local name, mode of administration, probable dosage and duration of treatment. Several new findings on the ethnobotanical practices are listed in Table 3.The interviewed healer groups use plant parts either single or in combined form to treat health disorders like cholera, asthma, bone diseases abdominal pain, diarrhea, dysentery, worm and stomach pain etc. So the study, training and documentation and conservation of the knowledge are very essential. The approach was to take advantage of traditional healer's knowledge and the capacity of farmers to experiment and solve their own problems.

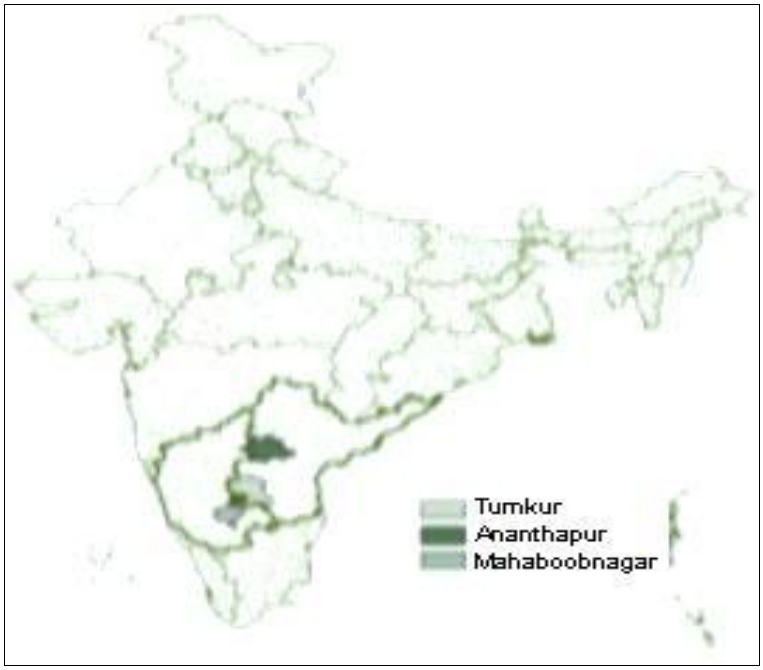

Fig. 1: Map of study area.

Table 1: Training programme profile of the three clusters.

No.	Cluster and village name	Place of training center	Training on	Selection techniques adapted	No. of farmers attended
	Cluster: Ananthapur				
1	Pampanur	Tiptur	Ethnomedicine	PRA/RRA	1
2	P. Thanda	Tiptur	Ethnomedicine	PRA/RRA	1
3	Y. Kothapalli	Tiptur	Ethnomedicine	PRA/RRA	1
	Cluster: Mahabubnagar				
4	Zamisthapur	Tiptur	Ethnomedicine	PRA/RRA	1
5	Bokkalonipalli	Tiptur	Ethnomedicine	PRA/RRA	1
6	Dharmapur	Tiptur	Ethnomedicine	PRA/RRA	1
7	Chowdanapalli	Tiptur	Ethnomedicine	PRA/RRA	1
	Cluster: Tumkur				
8	K. Shankaranahalli	Tiptur	Ethnomedicine	PRA/RRA	1
	Total				8

Table 2: Demographic and socio-economic profile of the clusters (Sources: CRIDA, DFID Technical report 2002-2005).

Particulars	Anantapur			Mahabubnagar				Tumkur
	Pampa-nur	P. Thanda	Y. Ko-thapalli	Zamis-thapur	Bokka-lonpalli	Dharma-pur	Chowda-napalli	Shanka-ranahalli
Population	771	745	1050	2311	1530	2482	1243	836
Male	371 (48)	371 (50)	532 (51)	1113 (48)	771 (51)	1273 (51)	622 (51)	281 (49)
Female	392 (52)	373 (50)	522 (49)	1202 (52)	762 (49)	1212 (49)	6202 (49)	292 (51)
Number of families	151	161	221	421	262	521	298	236
SC families	51 (35)	-	478 (21)	251 (58)	52 (19)	151 (28)	85 (29)	54 (23)
ST families	-	160 (100)	-	-	-	-	-	6 (3)
Literacy (%)	35	37	-	39.9	52.9	40.1	36.6	72.5
Ari households								
Very Small (<1 ha)	36(36)	5 (4)	68 (38)	196 (55)	103 (49)	250 (54)	147 (69)	68 (29)
Medium (1-2 ha)	37 (39)	53 (47)	77 (43)	107 (30)	58 (27)	149 (32)	39 (18)	68 (29)
Large (2-4 ha)	20 (23)	42 (38)	22 (12)	35 (10)	36 (17)	44 (9)	17 (8)	66 (28)
Very large (>4 ha)	12 (12)	12 (11)	12 (7)	17 (5)	15 (7)	23 (5)	10 (5)	33 (14)
Landless families								
Waged employment	40	30	-	42	35	31	68	20
Self employment	-	-	-	20	17	15	19	79
Other services	-	-	-	8	3	16	2	44
Wealth ranking								
Upper class	8 (6)	8 (6)	30 (14)	30 (7)	60 (22)	40 (8)	85 (8)	26 (11)
Middle class	33 (25)	40 (28)	135 (65)	110 (26)	41 (15)	190 (36)	105 (35)	130 (55)
Poor	93 (69)	94 (66)	45 (21)	286 (67)	167 (62)	298 (56)	107 (36)	79 (34)

Table 3: Ethnomedicinal plants used for different diseases (used in Anantapur and Mahabubnagar in Andhra Pradesh and Tumkur in Karnataka).

No.	Disease	*Botanical name*	Local name	Family	Habit	Parts used	Uses / Mode of Administration
1	Skin disease	*Abrus precatorius* L.	*Gulaganji*	Fabaceae	herb	leaves	2-3 fresh leaves are eaten twice a day for 1 week in case of bronchitis and cough.
2	Skin disease	*Achyranthes aspera* L.	*Uttarani balli*	Amaranthaceae	herb	plant	Whole plant burnt (1-2 g) mixed with honey is given twice a day for 3 days.
3	Skin disease	*Adhatoda zeylanica*	*Aadusoge*	Acanthaceae	herb	leaves	Adusoge leaf extract of (10 ml) with jiggery and honey is given twice a day for 4 to 6 days to treat asthma.
4	Skin disease	*Allium cepa* L.	*Heerulli*	Liliaceae	bulb	bulb	10-15 ml of onion bulb extract mixed with honey is given in the morning without food for 3 weeks to treat asthma.
5	Skin disease	*Allium sativum* L.	Bellulli	Liliaceae	tuber	cloves	1-2 garlic cloves are eaten with little salt at evening hours for 3 days in cough.
6	Skin disease	*Calotropis procera*	Bili hekkadagida	Asclepiadaceae	plant	root	2-3 g of root bark powder is taken with honey twice a day for 1 week in all types of cough.
7	Skin disease	*Ficus recemosa* L.	Atthimara	Moraceae	tree	fruit	1-2 fresh fruits are eaten with honey 1 to 3 times a day for 1 week in case of cough.
8	Skin disease	*Coriandrum sativum* L.	*Kottambari* soppu	Apiaceae	plant	plant	About 50 ml of leaves filtrate is taken twice a week for 21days in case of asthma.
9	Skin disease	*Curcuma longa* L.	*Harishina*	Zingiberaceae	herb	tuber	2-5 g of turmeric powder with little black pepper powder is taken with honey or milk at night for 3 to 5 days

							in case of cough and cold.
10	Skin disease	*Murraya koenigii* (L.)	*Karibevinagida*	Rutaceae	plant	leaves	About 100 ml of decoction prepared by boiling fresh leaves with cumin seeds, jiggery and ginger is given two times per day for 3-5 days in cough and cold.
11	Skin disease	*Ocimum americanun* L.	*Nayithulasi*	Lamiaceae	herb	leaves	Fifty ml of leaf decoction is given twice a day for 3-5 days to treat all types of cough.
12	Asthma	*Ocimum sanctum* L.	*Thulasiballi*	Lamiaceae	herb	leaves	Fresh leaves of this plant, leaves of *Leucas aspera* Spreng., *Momordica charantia* L. and dried fruits of *Piper longum* L. are crushed together; prepared into pills and two pills twice a day are given for one week to treat asthma
13	Skin disease	*Punica granatun* L.	*Dalimbegida*	Punicaceae	plant	leaves	About 5 g of leaves burnt ash or flower powder with honey is given orally thrice a day for 3-5 days; cures dry cough.
14	Skin disease	*Tylophora indica* (Burm. f.)	*Adumuttadasoppu*	Asclepiadaceae	herb/ plant	root	3-5 ml of root extract is given twice a day for 1 week in case of asthma.
15	Bone ache, joint pain, skin dental	*Vitex negundo* L.	*Lakkigida*	Verbenaceae	plant	leaves	Fresh leaves of this plant, are crushed together; prepared into pills and two pills twice a day are given for one week
16	Skin disease	*Zingiber officinale*	Shunti	Zingiberaceae	herb	rhizome	About 15-20 ml of juice prepared from ginger and betel leaves is given with honey three times a day for 1 week in case of cough.
17	Gastritis	*Acorus calamus* L.	*Baje*	Aracea	herb	rhizome	1-2 ml of rhizome juice for 10 days is given in case of gastritis.

18	Inflammation, urinary diseases	*Abutilon indicum* (L.)	*Shreemudre*	Malvaceae	plant	plant	Uses whole plant in inflammation, urinary diseases, bark diuretic leaf in piles.
19	Piles haemorrhage, disorders and skin diseases	*Acacia nilotica* (v) Willd	*Karijali*	Mimosaceae	plant	seeds fruit	Bark used in wounds, hemorrhage, dental disorders and skin diseases; fruit used in cough, dysentery and piles.
20	Jaundice, eye disease, wounds	*Achyranthes aspera* L.	*Uttharani*	Amaranthaceae	herb	root	Root used in eye disease, wounds and jaundice; seed in sinus, ear disease, and renal problems and stomach disorders.
21	Jaundice, vomiting, obesity, deafness,	*Aegle marmelos* (L.)	*Bilva pathre*	Rutaceae	plant	leaves	Fruit used in diarrhea, stomach disorders, jaundice, vomiting, obesity, deafness, eye diseases, pediatric diseases, fever, digestive problems and piles.
22	Vomiting and blood disorders	*Aloe vera* L.	*Lole sara*	Liliaceae	herb/ plant	leaves	Leaves used in piles, vomiting and blood disorders.
23	Night blindness leprosy and fever	*Alternanthera sessilis* (L.)	*Honagone*	Amaranthaceae	herb	plant	Whole plant in an intellectual-promoting, night blindness, leprosy and fever.
24	Cholera, diabetes, influenza, itches and pile	*Andrographis paniculata*	*Nela bevu*	Acanthaceae	herb/ plant	plant	Whole plant was used in cholera, diabetes, influenza, itches and pile.
25	Cough, piles, fever, defects in vision, epilepsy, urinary diseases	*Asparagus racemosus* Willd.	*Shatavari*	Liliaceae	tree	root	Root used in cough, piles, fever, defects in vision system, gastritis, diabetes and cough; leaf used in skin diseases.
26	Toothache and antiseptic	*Azadirachta indica.*	*Bevu*	Meliaceae	tree	leaves	Whole plant used in piles, wound, skin diseases, eye diseases, toothache

							and antiseptic.
27	Cough and inflammation	*Bacopa monnieri* (L.)	*Neeru brahmi*	Scrophulariaceae	plant	plant	Whole plant used in cough fever.
28	Cardiac disorders, jaundice, wounds	*Cassia fistula* L.	*Kakke*	Caesalpiniaceae	plant	leaves	Whole plant used in fever, cardiac disorders, jaundice, wounds and accidental wound.
29	Cardiac diseases	*Cyclea peltata*	*Paduvala balli*	Menispermaceae	plant/ climber	root	Root used in pain, cardiac diseases, burning sensation.
30	Rabies	*Datura metal* L.	*Dhatura*	Solanaceae	plant	leaves	Leaf used in boils, skin diseases. Flowers used in cracks in feet. Seeds used in rabies.
31	Urine retention diabetes sterility	*Erythrina variegata* L.	*Haalavaana*	Fabaceae	tree	root/bark	Root used in urine retention, diabetes and sterility; root bark used in dysentery; leaves in worms, acid gastritis and arthritis.
32	Leprosy	*Jatropha curcas* L.	*Doddaharalu*	Euphorbiaceae	plant	seed	Seed used in constipation, poisoning; oil in leprosy.
33	Diarrhea, cough thirst, diabetes, wound healing	*Syzygium cumini* (L.)	*Naayinerale*	Myrtaceae			Seed used in diarrhea, cough and thirst; bark used in diabetes and wound healing; leaf used in vomiting.
34	Skin disease	*Tectona grandis* L.f.	*Saguvani*	Verbenaceae	plant	seed/bark	Seed used in poisoning; bark, seed oil used in skin disease.
35	Wound and piles	*Terminalia arjuna* (Roxb.) Arn.	*Thoremathi*	Combretaceae	tree	seed	Seed used in wound, piles and cough.
36	Irregular fever, jaundice, diabetes, anemia	*Tinospora cordifolia* (Willd.)	*Amritha balli*	Menispermaceae	herb	root	Root used in vomiting; leaf used in fever, cough, irregular fever, jaundice, eye diseases and diabetes; stem used for in anemia.
37	Sinus, asthma and fever	*Vitex negundo* L.	*Kari lakki/ Indrani*	Verbenaceae	plant	root/ leaves	Root used in sinus leaf in cough, asthma and fever.

38	Bronchial asthma, cardiac disorder, ulcers blood disorders, scabies	*Withania somnifera* (L.)	*Ashwagandha/ Hire maddina gida*	Solanaceae	plant	root	Root used in bronchial asthma, cardiac disorder, suppression of urine, cough, dropsy, ulcers, blood disorders; leaf used for painful swelling, sore eyes.
39	Bronchial asthma	*Zingiber officinale* Rosc.	*Shunti*	Zigiberaceae	herb	rhizome	Rhizome used for fever, bronchial asthma, cough, deficient digestion, diarrhea, piles, stomachache, cardiac diseases, anemia and cough.
40	Chest pain, asthma	*Zizipus mauritiana* Lam.	*Bore hannu*	Rhamnaceae	tree	flower	Flower used in chest troubles; seed used in diarrhea; seed kernel used in piles, asthma, pimples and vomiting.
41	Scabies tongue/tape worms	*Sesbania grandiflora*	*Agase*	Fabaceae	tree	leaves/ seeds	Leaf used in thirst scabies; bark used in promoting memory, ulceration of tongue and alimentary canal disorders; flower used in night blindness and improve vision.
42	Cure white discharge in women	*Azadirachta indica*	Neem	Meliaceae	tree	bark/ leaves	The bark (20 g) and bark of Acacia nilotica (20 g) boiled in three 500 ml of water and filtered. The one glass filtrate is taken in the morning in empty stomach for 7 days to cure white discharge.
43	White discharge	*Ficus religiosa*	*Aralimara*	Moraceae	tree	bark	The paste of the bark (10 g) is taken with water one glass twice daily for 30 days to cure white discharges in women.
44	Abdominal disorders throat	*Mantha longifolia* L.	*Pudina*	Laminaceae	herb	leaves	Leaves used to control mouth smell (3-4 leaves) per day and abdominal pain.
45	Malaria stomach disorder	*Calatropis procera*	*Ekka*	Asclepiadoideae	plant	flower	Flower buds of caltrops along with black pepper seeds and salt are

							crushed to make small pills. 2 pills are taken twice daily for 3days to cure malaria.
46	Inflammation	*Eucalyptus globulus labill*	*Neelagiri*	Myrtaceae	tree	leaves	Eucalyptus oil (1-2 drops) relief headache inflammation and cough.
47	Ulcers of skin associated problems	*Emblica officinalis*	*Nellikayi*	Phyllanthous emblica	tree	fruit	Eat 1-2 fruits every day can cure ulcers, supports healthy metabolism, digestion and skin disorders.

CONCLUSION

BIRD-K in Karnataka has distinct approaches to rural health management developed over a period of time, based on inside and outside expertise including addressing livelihood issues of the rural poor people through income generation. Encourage nutritional gardens and addressing issues of food security promotion of ethnobotanical gardens and herbal medicines, training of rural villagers in use of herbal medicines for treatment of common ailments, health, education, provision of safe drinking water, immunization, spiritual orientation for mental health and personality development, indigenous health management etc. BAIF initiative is based on revitalizing local health traditions. Since the government hospitals are usually far away from the village and it is difficult to carry the ill men and women to the hospitals, they find it easier to consult the local traditional healers for diagnosis and treatment of the human diseases. The present study revealed that the south Indian rural people is primarily dependent on ethnomedicinal plants for treating various health diseases.

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REFERENCES

1. Bannerman RH. Traditional medicine in modern health care. World Health Forum, 1982; 3(1): 8-13.
2. Enabling Rural Poor for Better Livelihoods through Improved Natural Resource Management in SAT India. DFID-NRSP (UK) Project R8192, Final technical report 2002-2005: http://www.crida.in/DFID/Crida%20Technical%20Report% 20, 2002-05 PDF.pdf.
3. Gadgil M. Documenting diversity: An experiment. Curr Sci., 1996; 70: 36-44.
4. Bhat P, Hegde GR, Hegde G, Mulgund GS. Ethnomedicinal plants to cure skin diseases-An account of the traditional knowledge in the coastal parts of Central Western Ghats, Karnataka, India. J Ethnopharmacol, 2014; 151(1): 493-502.
5. Mahishi P, Srinivasa BH, Shivanna MB. Medicinal plant wealth of local communities in some villages in Shimoga District of Karnataka, India. J Ethnopharmacol, 2005; 98(3): 307-312.
6. Shiddamallayya N, Yasmeen A, Gopakumar K. Hundred common forest medicinal plants of Karnataka in primary healthcare. Indian Journal of Traditional Knowledge, 2010; 9(1): 90-95.
7. Policepatel SS, Manikrao VG. Ethnomedicinal plants used in the treatment of skin diseases in Hyderabad Karnataka region, Karnataka, India. Asian Pac J Trop Biomed, 2013; 3(11): 882-886.
8. Murthy SMS, Vidyasagar GM. Traditional knowledge on medicinal plants used in the treatment of respiratory disorders in Bellary district, Karnataka, India. Indian Journal of Natural Products and Resources, 2013; 4(2): 189-193.